

S/N To be assigned

PATENT

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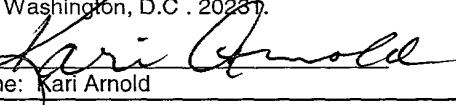
Applicant: Räsänen, et al Serial No.: UNKNOWN
Filed: CONCURRENT HEREWITH Docket No.: 975.363USW1
Title: INTERWORKING METHOD AND APPARATUS

CERTIFICATE UNDER 37 CFR 1.10

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By: 
Name: Kari Arnold

PRELIMINARY AMENDMENT

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Please enter the following preliminary amendment into the above-referenced application.

ABSTRACT

Please insert the attached abstract into the application as the last page thereof.

SPECIFICATION

Please revise the specification by deleting lines 16 through 34 of page 3 and lines 1 through 8 of page 4. Marked up pages 3 and 4 showing deleted portion attached. Please replace deleted portion with the attached page 3a.

CLAIMS

Please cancel claims 1-24. Please add new claims 25-48 as follows. A clean copy of the new claims is included below.

25. (NEW) An interworking method for a data connection between a first network element terminal supporting a first processing scheme and a second terminal supporting a second processing scheme, comprising the steps of:

- monitoring by an interim network element locating between the first and the second terminals the negotiation on a processing scheme between the first and the second terminals,
- detecting that the second terminal does not support a first processing scheme proposed by the first terminal, and
- providing by the interim network element an interworking function for adapting the first processing scheme to a second processing scheme supported by the second terminal.

26. (NEW) A method according to claim 25, wherein said monitoring step comprises extracting negotiation symbols indicating said first or second processing schemes during a negotiation processing between said first and second terminals, and comparing said extracted negotiation symbols.

27. (NEW) A method according to claim 25, further comprising the step of passing a bit stream via said data connection without adaptation, when said detecting step indicates that said first and second processing schemes are the same schemes.

28. (NEW) A method according to claim 25, wherein the first and second processing schemes correspond to first and second call setup negotiations.

29. (NEW) A method according to claim 28, wherein said first call setup negotiation is an analog setup negotiation via a modem, and said second call setup negotiation is digital setup negotiation.

30. (NEW) A method according to claim 25, wherein said first and second processing schemes correspond to first and second error correction schemes.

31. (NEW) A method according to claim 30, wherein said providing step comprises replacing a negotiation symbol indicating said first error correction scheme by a negotiation symbol indicating said second error correction scheme, and

replacing a negotiation symbol indicating said second error correction scheme by a negotiation symbol indicating the highest common error correction scheme supported by said first terminal and said interworking function.

32. (NEW) A method according to claim 30, wherein said first and second processing schemes correspond to first and second error correction schemes, and wherein said providing step comprises replacing a negotiation symbol indicating said first error correction scheme by a negotiation symbol indicating the lowest available error correction scheme, and replacing a negotiation symbol indicating said second error correction scheme by a negotiation symbol indicating the highest error correction scheme supported by said first terminal and said interworking function.

33. (NEW) A method according to claim 31, wherein said providing step comprises converting data frames comprising said highest common error correction scheme into data frames comprising said second error correction scheme, and converting data frames comprising said second error correction scheme into data frames comprising said highest common error correction scheme supported by said first terminal and said interworking function.

34. (NEW) A method according to claim 32, wherein said providing step comprises converting data frames comprising said highest common error correction scheme into data frames comprising said lowest available error correction scheme, and converting data frames comprising said lowest available error correction scheme into data frames comprising said highest common error correction scheme supported by said first terminal and said interworking function.

35. (NEW) A method according to claim 25, wherein said data connection is a multimedia connection.

36. (NEW) An interworking apparatus for performing an interworking processing in a data connection between a first terminal supporting a first processing scheme and a second terminal supporting a second processing scheme and locating between the first and the second terminals, comprising:

- monitoring means for monitoring the negotiation on a processing scheme between the first and the second terminals,
- detecting means for detecting that the second terminal does not support a first processing scheme proposed by the first terminal, and
- providing means for providing an interworking function for adapting the first processing scheme to a second processing scheme supported by the second terminal.

37. (NEW) An apparatus according to claim 36, wherein said monitoring means comprises an extracting means for extracting an information indicating said first or second processing scheme during a negotiation step between said first terminal and said second terminal, and a comparing means for comparing said first and second processing schemes based on said extracted information.

38. (NEW) An apparatus according to claim 37, further comprising a buffer means for storing said information indicating said first and second processing schemes, wherein said comparing means is arranged to read said information indicating said first and second processing schemes from said buffer means.

39. (NEW) An apparatus according to claim 36, further comprising switching means for by-passing said providing means, when said detecting means determines that the first processing scheme is supported by the second terminal (5).

40. (NEW) An apparatus according to claim 36, wherein said first and second processing schemes correspond to first and second call setup negotiations.

41. (NEW) An apparatus according to claim 40, wherein said first call setup negotiation is an analog setup negotiation via a modem, and said second call setup negotiation is digital setup negotiation.

42. (NEW) An apparatus according to claim 36, wherein said first and second processing schemes correspond to first and second error correction schemes.

43. (NEW) An apparatus according to claim 42, wherein said providing means comprises a conversion means for replacing a negotiation symbol indicating said first error correction scheme by a negotiation symbol indicating said second error correction scheme and for replacing a negotiation symbol indicating said second error correction scheme by a negotiation symbol indicating the highest common error correction scheme supported by said first terminal and said error correction apparatus.

44. (NEW) An apparatus according to claim 36, wherein said first and second processing schemes correspond to first and second error correction schemes, and wherein said providing means comprises a conversion means for replacing a negotiation symbol indicating said first error correction scheme by a negotiation symbol indicating the lowest available error correction scheme, and for replacing a negotiation symbol indicating said second error correction scheme by a negotiation symbol indicating the highest common error correction scheme supported by said first terminal and said error correction apparatus.

45. (NEW) An apparatus according to claim 43, wherein said conversion means is arranged to convert data frames comprising said highest common error correction scheme into data frames comprising said second error correction scheme, and to convert data frames comprising said second error correction scheme into data frames comprising said highest common error correction scheme supported by said first terminal and said error correction apparatus.

46. (NEW) An apparatus according to claim 44, wherein said conversion means is arranged to convert data frames comprising said highest common error correction scheme into data frames comprising said lowest available error correction scheme, and to convert data frames comprising said lowest available error correction scheme into data frames comprising said highest common error correction scheme supported by said first terminal and said error correction apparatus.

47. (NEW) An apparatus according to claim 36, wherein said interworking apparatus is a network element having an interworking function.

Furthermore, a huge spectrum of specifications is used in fixed networks for defining multimedia or video calls with various protocols, transfer capabilities and ways of signaling, e.g. ITU-T H series recommendations and V series recommendations.

In fixed networks, terminals set up a call and negotiate on parameters with inband procedures defined in V.8, V.8bis and V.140.

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Thus, flexible interworking is required between different networks, such as mobile and a fixed network, in order to support various services.

[SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide an interworking method and apparatus by means of which the support of various services can be assured.

This object is achieved by an interworking method for a data connection between a first terminal supporting a first processing scheme and a second terminal supporting a second processing scheme, comprising the steps of:
25 checking the first and second processing schemes; and providing an interworking function for adapting said first processing scheme to said second processing scheme, when said checking step indicates that the first processing scheme is not supported by the second terminal.
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Furthermore, the above object is achieved by an interworking apparatus for performing an interworking in a data connection between a first terminal supporting a first

processing scheme and a second terminal supporting a second processing scheme, comprising:

checking means for checking the first and second processing schemes; and

5 adaptation means for adapting the first processing scheme to the second processing scheme, when the checking means determines that the first processing scheme is not supported by the second terminal.]

10 Accordingly, a mapping is provided for adapting various video phone or multimedia implementations between mobile and fixed networks terminals and for setting up a call through mobile networks even in cases where the terminals are not able to negotiate with inband procedures. The

15 processing schemes, e.g. error correction levels or protocol specifications, of the terminals are checked during an intermediate processing which may be performed by an interworking function. If the processing scheme used on a first transmission leg leading to the first terminal

20 cannot be used on the other transmission leg leading to the second terminal, different processing schemes are used on the two legs, and the intermediate processing (e.g. interworking function) performs the adaptation or mapping between the processing schemes.

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Thus, an error correction having a higher robustness can be provided on the less reliable leg without modifying the other terminal having a lower robustness level.

30 Preferably, the checking may be performed by extracting negotiation symbols indicating the first and second processing scheme during a negotiation processing between the first and second terminals, and comparing the extracted negotiation symbols.

2025 RELEASE UNDER E.O. 14176

Reference D1 discloses a system performing an initialization of an error correction scheme to be used in communication. The protocol conversion controller receives a connection request to the mobile station. The controller 5 initializes synchronization negotiations for both ARQ and FEC type of error correction schemes. The controller receives synchronization signal for one of the error correction schemes and continues to use said selected protocol.

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However, the teaching of document D1 is not concerned with an end-to-end signaling.

15 Hence, it is an object of the present invention to provide an interworking method and an interworking apparatus by means of which the above mentioned drawbacks can be avoided, i.e. by means of which the support of various services can be assured while taking account of involved end-to-end signaling.

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According to the present invention, this object is achieved by an interworking method as defined in claim 1.

25 Furthermore, the above object is achieved by an interworking apparatus according to claim 12.

Advantageous further refinements of the present invention are set out in the respective dependent claims.

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48. (NEW) An apparatus according claim 36, wherein said data connection is a multimedia connection.

REMARKS

The above preliminary amendment is made to insert an abstract page into the application, revise the specification and to enter new claims 25 through 48

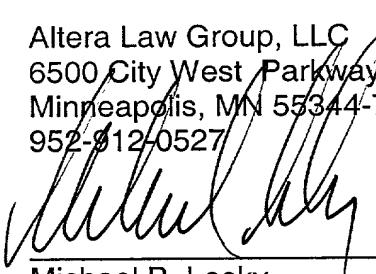
Applicant respectfully requests that this preliminary amendment be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Michael B. Lasky at 952/912-0527.

Respectfully submitted,

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Date: November 13, 2001

By: 

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